

A ¹H-NMR-BASED METABOLOMIC ANALYSIS OF PROPOLIS FROM SANTA CATARINA STATE

Somensi-Zeggio, A.R.¹; Tomazzoli, M.M.¹; Kobe, S.O.¹; Zeri, A.C.M.²; Sforça, M.²; Rocha, M.P.³; Carreira, R.³; Maraschin, M.¹. ¹Plant Morphogenesis and Biochemistry Laboratory, Federal University of Santa Catarina, Florianópolis, Santa Catarina, Brazil. ²Bioscience Laboratory/LNLS, Campinas, São Paulo, Brazil. ³ Department of Informatics – Minho University, Braga, Portugal.

Propolis is a resinous biomass produced by honeybees from exudates of local flora. It has been used since ancient times in folk medicine and in recent years has been added to foods and beverages to improve health and prevent diseases. The chemical composition of propolis is highly variable and depends on the climate, season, specie of bee, and mainly the local flora visited by bees to collect resin. In order to identify groups of chemical similarity among samples (n=20 autumn, n=16 winter, n=19 spring, n=17 summer) of propolis produced in Santa Catarina (SC) state (southern Brazil - 2010), lyophilized ethanolic extracts (200 mg/ml, EtOH 70%, v/v) were solubilized in MeOD₃ (700µl) and analyzed by NMR spectroscopy. One-dimensional ¹H-NMR spectra were acquired at a magnetic field strength of 500,13/125,03 MHz using a Varian Inova 500 MHz equipment and standard conditions of data acquisition. The ¹H-NMR peak list data set was processed under MetaboAnalyst 2.0. suite, computing the resonances at 0.80-12ppm spectral window. Principal Components Analysis (PCA) score scatter plots (PC1 88.2% x PC2 2.2%) clearly demonstrated samples discriminated mainly according to the season of production. These results suggest that not only geographical origin is important for the classification of propolis, but the seasonal effects as well. Since seasons directly influence the flora available from where bees collect resin, the propolis chemical profile can be significantly modified over the seasons even from a same geographical origin.